



U.S. Department
Of Transportation

Research Note

DOT HS 809 867

March 2005



National Highway Traffic Safety Administration

Motorcycle Helmet Use in 2004 – Overall Results

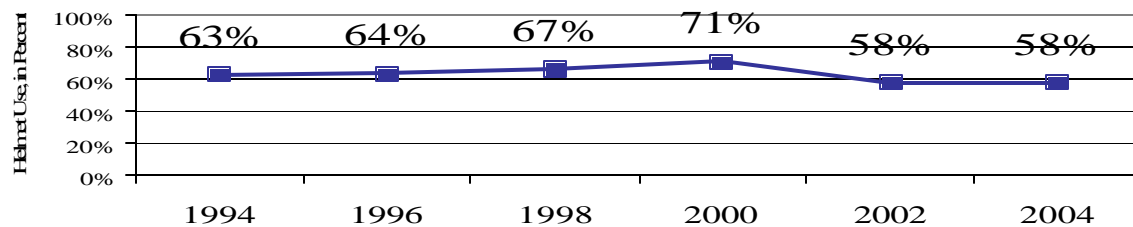
Donna Glassbrenner, Ph.D.¹

In June 2004, 58 percent of motorcyclists in the U.S. used helmets, unchanged from the usage rate two years ago. This result is from the National Occupant Protection Use Survey (NOPUS), which provides the only probability-based observed data on helmet use in the United States. The NOPUS is conducted by the National Center for Statistics and Analysis in the National Highway Traffic Safety Administration (NHTSA).

The 2004 survey also found the following:

- The use of helmets that are not compliant with Federal safety regulations declined from 14 percent in 2002 to 11 percent in 2004. Such helmets include novelty helmets and helmets with an insufficient coverage area.
- Use rates for both helmets that do and do not comply with Federal safety regulations are statistically lower in States that do not require helmet use, compared to States that require use. In 2004, 71 percent of motorcyclists in States requiring helmet use wore compliant helmets and 16 percent wore noncompliant helmets. In States with no helmet law, 48 percent used compliant and 6 percent used noncompliant helmets.

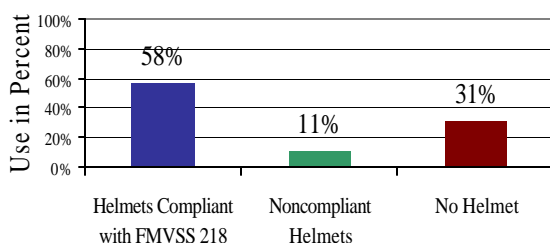
Motorcycle Helmet Use, 1994 - 2004



Estimates from 1996-2004 reflect helmets compliant with Federal Motor Vehicle Safety Standard 218. The 1994 estimate reflects the use of all helmets, both compliant and non-compliant.

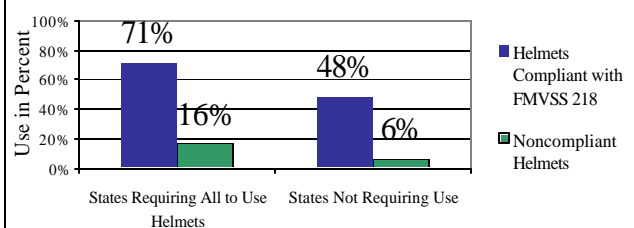
Source: National Occupant Protection Use Survey, National Highway Traffic Safety Administration, National Center for Statistics and Analysis

Motorcycle Helmet Use in 2004, by Helmet Type



Source: National Occupant Protection Use Survey, National Highway Traffic Safety Administration, National Center for Statistics and Analysis

Motorcycle Helmet Use in 2004, by Law and Helmet Type



Source: National Occupant Protection Use Survey, National Highway Traffic Safety Administration, National Center for Statistics and Analysis

¹ Dr. Glassbrenner, a researcher with the Mathematical Analysis Division, can be reached at donna.glassbrenner@nhtsa.dot.gov.

Use of Helmets Compliant with Federal Safety Regulations, by Major Characteristics

Motorcyclist Group	2002		2004		2002-2004 Change		
	Helmet Use ¹	Significantly High and Low Rates ²	Helmet Use ¹	Significantly High and Low Rates ²	Change in Use, in Percentage Points	Confidence in a Change in Use ³	Percentage Reduction in Nonuse
All Motorcyclists	58%		58%		0	0%	0%
Operators	59%		63%	H	4	57%	10%
Passengers	48%		41%	L	-7	49%	-13%
Motorcyclists in Jurisdictions in Which ⁴							
Use Is Required for All Motorcyclists	73%	H	71%	H	-2	18%	-7%
Other Jurisdictions	46%	L	48%	L	2	25%	4%
Motorcyclists on							
Expressways	66%		65%		-1	4%	-3%
Surface Streets	54%		58%		4	38%	9%
Motorcyclists Traveling in							
Fast Traffic	59%		59%		0	0%	0%
Medium Speed Traffic	53%		58%		5	40%	11%
Slow Traffic	60%		58%		-2	16%	-5%
Motorcyclists Traveling in							
Heavy Traffic	NA		NA		NA		
Moderately Dense Traffic	NA		52%		NA		
Light Traffic	56%		58%		2	16%	5%
Motorcyclists in							
Light Precipitation	NA		74%		NA		
Light Fog	NA		NA		NA		
Clear Weather Conditions	57%		57%		0	0%	0%
Motorcyclist Drivers When							
They are the Sole Rider	NA		62%		NA		
They Have a Passenger	NA		66%		NA		
Motorcyclists in the							
Northeast	65%		57%		-8	69%	-23%
Midwest	54%		70%		16	77%	35%
South	62%		52%		-10	74%	-26%
West	52%		57%		5	49%	10%
Motorcyclists in							
Urban Areas	52%		70%		18	82%	38%
Suburban Areas	54%		55%		1	6%	2%

Motorcyclist Group	2002		2004		2002-2004 Change		
	Helmet Use ¹	Significantly High and Low Rates ²	Helmet Use ¹	Significantly High and Low Rates ²	Change in Use, in Percentage Points	Confidence in a Change in Use ³	Percentage Reduction in Nonuse
Rural Areas	59%		59%		0	0%	0%
Motorcyclists Traveling During							
Weekdays	58%		59%		1	8%	2%
Weekday Rush Hours	58%		57%		-1	9%	-2%
Weekday Nonrush Hours	58%		60%		2	15%	5%
Weekends	57%		58%		1	29%	2%

¹ Use of helmets meeting the safety requirements of Federal Motor Vehicle Safety Standard 218, observed during daytime (8 a.m. - 6 p.m.) among riders and passengers of motorcycles.

² Rates flagged with an "H" or "L" are statistically high or low in their category at a 90% confidence level.

³ The degree of statistical confidence that the 2004 use rate is different from the 2002 rate.

⁴ The use rates here refer to the type of law in effect at the time the observations were made.

NA: Data not collected or not sufficient to produce a reliable estimate.

Source: National Occupant Protection Use Survey, National Highway Traffic Safety Administration, National Center for Statistics and Analysis

Use of Noncompliant Helmets by Major Characteristics

Motorcyclist Group	2002		2004		2002-2004 Change	
	Use of Noncompliant Helmets ¹	Significantly High and Low Rates ²	Use of Noncompliant Helmets ¹	Significantly High and Low Rates ²	Change in Use of Noncompliant Helmets, in Percentage Points	Confidence in a Change in Use ³
All Motorcyclists	14%		11%		-3	76%
Operators	15%		12%		-3	63%
Passengers	14%		8%		-7	77%
Motorcyclists in Jurisdictions in Which ⁴						
Use Is Required for All Motorcyclists	27%	H	16%	H	-10	90%
Other Jurisdictions	7%	L	6%	L	-1	20%
Motorcyclists on						
Expressways	15%		14%		-1	15%
Surface Streets	15%		11%		-4	76%
Motorcyclists Traveling in						
Fast Traffic	14%		9%		-5	76%
Medium Speed Traffic	14%		12%		-3	30%
Slow Traffic	16%		11%		-6	62%
Motorcyclists Traveling in						
Heavy Traffic	NA		NA		NA	
Moderately Dense Traffic	NA		13%		NA	
Light Traffic	15%		10%		-5	82%

Motorcyclist Group	2002		2004		2002-2004 Change	
	Use of Noncompliant Helmets ¹	Significantly High and Low Rates ²	Use of Noncompliant Helmets ¹	Significantly High and Low Rates ²	Change in Use of Noncompliant Helmets, in Percentage Points	Confidence in a Change in Use ³
Motorcyclists in						
Light Precipitation	NA		NA		-57	91%
Light Fog	NA		NA		-4	5%
Clear Weather Conditions	14%		11%		-3	66%
Motorcyclist Drivers When						
They are the Sole Rider	NA		12%		NA	
They Have a Passenger	NA		12%		NA	
Motorcyclists in the						
Northeast	26%		10%		-17	97%
Midwest	NA		9%		-4	41%
South	14%		10%		-4	60%
West	NA		14%		4	36%
Motorcyclists in						
Urban Areas	10%		4%	L	-6	75%
Suburban Areas	16%		14%		-1	18%
Rural Areas	14%		9%		-5	83%
Motorcyclists Traveling During						
Weekdays	10%	L	11%		0	0%
Weekday Rush Hours	13%		10%		-4	59%
Weekday Nonrush Hours	9%		11%		2	36%
Weekends	21%	H	11%		-9	94%

¹ Use of helmets that do not meet the safety standards of Federal Motor Vehicle Safety Standard 218, observed during daytime (8 a.m. - 6 p.m.) among riders and passengers of motorcycles.

² Rates flagged with an "H" or "L" are statistically high or low in their category at a 90% confidence level.

³ The degree of statistical confidence that the 2004 use rate is different from the 2002 rate.

⁴ The use rates here refer to the type of law in effect at the time the observations were made.

NA: Data not collected or not sufficient to produce a reliable estimate.

Source: National Occupant Protection Use Survey, National Highway Traffic Safety Administration, National Center for Statistics and Analysis

Survey Methodology

The National Occupant Protection Use Survey (NOPUS) is the only probability-based observational survey of motorcycle helmet use in the United States. The survey observes usage as it actually occurs at a random selection of roadway sites, and so provides the best tracking of helmet use in this country.

The survey data is collected by sending observers to a set of probabilistically sampled roadways, who observe motorcyclists between the hours of 8 a.m. and 6 p.m.. Observations are made either while standing at the roadside or, in the case of expressways, while riding in a vehicle in traffic. Observers do not stop motorcycles or interview motorcyclists, so that the NOPUS captures the untainted behavior of riders. The 2004 NOPUS data were collected

between June 7 and July 11, 2004, excluding the period July 2-5 inclusive, while the 2002 data were collected between June 3 and June 22, 2002.

Because the NOPUS sites were chosen through probabilistic means, we can analyze the statistical significance of its results. Statistically significant increases in helmet use between 2002 and 2004 would be identified in the table "Use of Helmets Compliant with Federal Safety Regulation, by Major Characteristics" by having a result that is 90 percent or greater in the table's column 7 (although there were no such cases in 2002-2004), and similarly for the subsequent table on the use of noncompliant helmets. Significantly high and low levels of helmet use, such as the lower use in States that do not require all motorcyclists to use helmets, are identified by H's and L's in columns 3 and 5. Such comparisons are made within categories, such as road type, delineated by solid horizontal lines in the tables. The exception to this is the grouping "Motorcyclists Traveling During ...," in which weekdays are compared to weekends, and weekday rush hour to weekday nonrush hour.

Sites, Motorcycles, and Motorcyclists Observed

Numbers of	2002	2004	Percentage Increase
Sites Observed	2,000	2,000	0%
Motorcycles Observed	900	1,300	44%
Motorcyclists Observed	1,100	1,600	45%

The NOPUS uses a complex multi-stage probability sample, statistical data editing, imputation of unknown values, and complex estimation and variance estimation procedures. See the NHTSA Technical Report referenced below for more information on these procedures.

Data collection, estimation, and variance estimation for the NOPUS are conducted by Westat, Inc. under the direction of the National Center for Statistics and Analysis in NHTSA under federal contract number DTNH22-00-D-07001.

Definitions

NHTSA established standards for motorcycle helmets to ensure a certain degree of protection in a crash in Federal Motor Vehicle Safety Standard 218. (Code of Federal Register, Title 49, Volume 5, Part 571, Section 218, October 2003) *DOT-compliant helmets* are helmets that meet this safety standard, while *noncompliant helmets* are helmets that do not.

DOT-compliant helmets are identified by a sticker inside the helmet. For the purposes of NOPUS's nonintrusive observation, NOPUS data collectors categorize noncompliant helmets as helmets that have a small coverage area (such as "beanie helmet") or some protrusion (such as a spike). Experts at NHTSA guesstimate that these criteria correctly characterize the compliance over 90 percent of motorcycle helmets.

NHTSA estimates helmet use as the use of DOT-compliant helmets.

"Expressways" are defined to be roadways with limited access, while "surface streets" comprise all other roadways.

A roadway is defined to have "fast traffic" if during the observation period the average speed of passenger vehicles that passed the observer(s) exceeded 50 mph, with "medium speed traffic" defined as 31 - 50 mph and "slow traffic" defined as 30 mph or slower.

A roadway is defined to have "heavy traffic" if the average number of vehicles per lane mile on the roadway during the observation period exceeded 45 vehicles per lane mile, with "moderately dense traffic" defined as 26 - 45 vehicles per lane per mile and "light traffic" having at most 25 vehicles per lane per mile.

Also, we note that at the time the 2002 and 2004 surveys were conducted, 19 States, D.C., and Puerto Rico required all motorcyclists to be helmeted. Other States either required only a subset of riders to use helmets (such as those under 18 years of age), or have no helmet requirement.

States with Laws¹ Requiring Helmet Use for All Motorcycle Riders

Alabama	Mississippi	Oregon
California	Missouri	Puerto Rico
District of Columbia	Nebraska	Tennessee
Georgia	Nevada	Vermont
Maryland	New Jersey	Virginia
Massachusetts	New York	Washington
Michigan	North Carolina	West Virginia

¹States with laws in effect as of May 21, 2004. No additional States had such laws during the period June 30, 2002 – July 30, 2004.

For More Information

For detailed analyses of the data in this publication, as well as additional data and information on the survey design and analysis procedures, see the upcoming publication “Motorcycle Helmet Use in 2004 – Analysis,” expected to be available on the Web site <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html> in the spring of 2005.

The NOPUS also observes other types of restraints, such as child restraints and safety belts, and observes driver cell phone use. This publication is part of a series that presents overall results from the survey on these topics. Please see other members of the series, such as “Child Restraint Use in 2004 – Overall Results,” and the corresponding NHTSA Technical Report “Child Restraint Use in 2004 –Analysis,” for the latest data on these topics.